

# PATENT ABSTRACTS OF JAPAN

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(71)Applicant : HITACHI LTD

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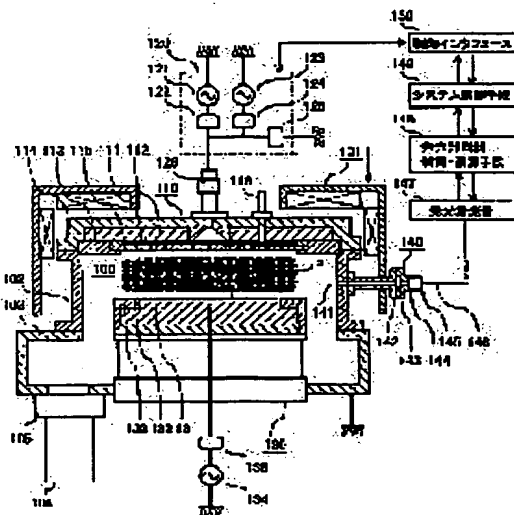
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## (54) PLASMA PROCESSING DEVICE

### (57)Abstract:

**PROBLEM TO BE SOLVED:** To provide a plasma processing device which is capable of measuring plasma emission in a processing chamber stably and accurately for many hours without deteriorating a measuring window through which plasma emission is measured in transmissivity.

**SOLUTION:** A plasma processing chamber processes a wafer with plasma through such a manner where plasma is generated in a processing chamber 100, by interaction between electromagnetic waves transmitted from a UHF band antenna 110 provided inside the processing chamber 100 and a magnetic field formed by a magnetic field generating means 101 installed around the processing chamber 100. A hollow tube 142 is installed in an opening 141 provided to the side wall 102 of the processing chamber 100, and a plasma emission measuring window 143 is fixed to the tip of the hollow tube 142. The line of magnetic force of a magnetic field formed by the magnetic field generating means 101 is so set as to form an angle with the hollow tube 142, by which plasma can be prevented from penetrating into the hollow tube 142, so that deposits are restrained from adhering to the measurement window 143, and the measurement window 143 is prevented from deteriorating in transmissivity with time and can be kept constant in transmissivity.



## LEGAL STATUS

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## INTERNATIONAL SEARCH REPORT

International Application No.

PCT/US03/26302

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : C03C 15/00; C23F 1/00; H01L 21/00

US CL : 156/345.24, 345.25, 345.48; 118/712, 713, 7231; 204/192.13, 192.33, 298.03, 298.32; 216/59, 60, 68; 427/8; 438/7

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
U.S. : Please See Continuation Sheet

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
EAST Search

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5,290,383 A (KOSHIMIZU) 1 March 1994 (01.03.1994), fig. 26 and its description.	1-4, 8-14, 21-24, 28, 32-33
Y		5-7, 15-20, 25-27, 29-31
Y,P	US 6,503,364 B1 (MASUDA et al.) 7 January 2003 (07.01.2003), figures 2-3 and their descriptions.	5-7, 18-20, 25-27, 29
Y	JP 2001-77092 A (MASUDA et al.) 23 March 2001 (23.03.2001), figures 2-3 and their descriptions.	5-7, 18-20, 25-27, 29
Y	US 6,071,375 A (CHEN et al.) 6 June 2000 (06.06.2000), figs. 1-3 and col. 3-line 19 to col. 5-line 60.	17, 30
Y	US 6,306,246 B1 (MELVIN et al.) 23 October 2001 (23.10.2001), figs. 2-4 and their descriptions.	17, 30
A	US 5,824,158 A (TAKEUCHI et al.) 20 October 1998 (20.10.1998), see entire document.	1-33



Further documents are listed in the continuation of Box C.



See patent family annex.

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